



**Missouri Department of Natural Resources**  
**Chariton River - WBID 0640**  
**Water Chemistry data by U.S. Geological Survey, 2000-2006**

Org	Site	Site Name	Yr	Mo	Dy	Flow	C	DO	pH	NH3N	FC	Ecoli	Recreation Season	
													Log FC	Log E coli
USGS	640/19.7	Chariton R. nr. Prairie Hill	2000	1	4	75	2	14.8	7.6	0.0099	8			
USGS	640/19.7	Chariton R. nr. Prairie Hill	2000	3	6	191	16	11.6	7.8	0.01	1	1		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2000	5	1	55	23	9.8	8.1	0.0099	13	15	2.56	2.71
USGS	640/19.7	Chariton R. nr. Prairie Hill	2000	7	10	344	32	6.8	7.7	0.0099	560	200	6.33	5.30
USGS	640/19.7	Chariton R. nr. Prairie Hill	2000	9	13	33	19	8.2	7.7	0.0099	105	73	4.65	4.29
USGS	640/19.7	Chariton R. nr. Prairie Hill	2000	11	20	65	3	13.7	7.5	0.14	100	1		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2001	1	2	66	0	7.6	7.1	0.25	4	2		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2001	3	5	2970	4	12	7.5	0.13	110	83		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2001	5	1	1770	20	9.8	8	0.0199	83	25	4.42	3.22
USGS	640/19.7	Chariton R. nr. Prairie Hill	2001	7	10	1650	27	7	7.6	0.0199	160	80	5.08	4.38
USGS	640/19.7	Chariton R. nr. Prairie Hill	2001	9	4	188	29	10.4	8.5	0.0199	190	130	5.25	4.87
USGS	640/19.7	Chariton R. nr. Prairie Hill	2001	11	5	481	14.7	10.2	7.6	0.02	60	34		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2002	1	7	60	0.6	13.3	7.5	0.19	1	0.499		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2002	3	5	120	4.9	13.6	8	0.07	3	2		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2002	5	6	5920	18.6	7.5	7.4	0.12	15200	6800	9.63	8.82
USGS	640/19.7	Chariton R. nr. Prairie Hill	2002	7	15	965	28.7	8.8	8.1	0.0199	520	180	6.25	5.19
USGS	640/19.7	Chariton R. nr. Prairie Hill	2002	9	4	61	24.1	7.7	8	0.0199	140	72	4.94	4.28
USGS	640/19.7	Chariton R. nr. Prairie Hill	2002	11	26	58	3	13.7	8.3	0.0199	2	5		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2003	1	10	55	3	15.9	8.3	0.0199	8	7		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2003	3	18	274	15	10.4	8.2	0.06	89			
USGS	640/19.7	Chariton R. nr. Prairie Hill	2003	5	1	530	19	7.3	8	0.07	7500	13000	8.92	9.47
USGS	640/19.7	Chariton R. nr. Prairie Hill	2003	7	30	58	31.5	8.8	8.6	0.0199	90	36	4.50	3.58
USGS	640/19.7	Chariton R. nr. Prairie Hill	2003	9	11	46	23	7.2	8.3	0.0199	640	140	6.46	4.94
USGS	640/19.7	Chariton R. nr. Prairie Hill	2003	11	5	61	9.8	10.2	8.2	0.0199	41	27		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2004	1	7	80	0.6	13.9	7.5	0.28	40	20		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2004	3	1	444	2.5	11	7.9	0.09	17	10		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2004	5	19	136	21.6	8	7.9	0.0199	3900	3400	8.27	8.13
USGS	640/19.7	Chariton R. nr. Prairie Hill	2004	7	14	1970	26.1	5.7	7	0.0199	1200	1600	7.09	7.38
USGS	640/19.7	Chariton R. nr. Prairie Hill	2004	9	1	2100	22.7	7	7.2	0.0199	770	690	6.65	6.54
USGS	640/19.7	Chariton R. nr. Prairie Hill	2004	11	8	646	11.2	9.8	7.6	0.0199	310	66		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2005	1	25	518	0.1	13.3	7.3	0.15	120	90		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2005	3	7	535	10.1	11.6	7.8	0.0199	7	8		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2005	5	3	1110	12.2	10.5	8.2	0.0199	140	100	4.94	4.61
USGS	640/19.7	Chariton R. nr. Prairie Hill	2005	7	11	219	29.4	8	8.1	0.0199	210	150	5.35	5.01
USGS	640/19.7	Chariton R. nr. Prairie Hill	2005	9	6	63	30.2	8.5	8.1	0.0199	32	38	3.47	3.64
USGS	640/19.7	Chariton R. nr. Prairie Hill	2005	11	2	56	10	11.3	8.2	0.0199	53	27		

Org	Site	Site Name	Yr	Mo	Dy	Flow	C	DO	pH	NH3N	FC	Ecoli	Recreation Season	
													Log FC	Log E coli
USGS	640/19.7	Chariton R. nr. Prairie Hill	2006	1	5	108	2.9	12.3	7.8	0.0199	60	31		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2006	3	6	82	13.8	11.5	8.3	0.0199	27	4		
USGS	640/19.7	Chariton R. nr. Prairie Hill	2006	5	3	2640	16.4	7.7	6.8	0.19	3900	4700	8.27	8.46
USGS	640/19.7	Chariton R. nr. Prairie Hill	2006	7	5	84	29.8	7.7	8	0.00499	84	80	4.43	4.38
USGS	640/19.7	Chariton R. nr. Prairie Hill	2006	9	5	74	25.8	8.8	8.4	0.00499	44	11	3.78	2.40
												log mean	5.77	5.31
												log standard deviation	1.86	2.04
												number of samples	21	21

Chariton River is a Class A whole body contact recreational water with a Fecal Coliform standard of 200 colonies/100 ml and *E. coli* standard of 126 colonies/100 ml. This standard is for the geometric (log) mean of all bacterial samples taken during the recreational season , April 1 to Oct. 31. The water is judged to be impaired if the 60 percent upper confidence limit, or UCL, of the mean is more than the appropriate water quality standard. The formula for the 60 percent UCL is:

$$60 \text{ percent UCL} = (\text{sample mean}) + ((0.253)(\text{standard deviation})/(\text{square root of sample size}))$$

Bacterial data are normalized by natural log transformation and the UCL calculations for both Fecal Coliform and *E. coli* are shown below:

Fecal Coliform 60 percent UCL=	(5.77) + ((0.253)(1.86)/4.58) =	5.9	Antilog of 5.87=	<span style="border: 1px solid black; padding: 2px;">354.249</span>
<i>E. coli</i> 60 percent UCL =	(5.31) + ((0.253)(2.04)/4.58) =	5.4	Anitlog of 5.42=	<span style="border: 1px solid black; padding: 2px;">225.879</span>

Since the 60 percent UCL for both fecal coliform and *E. coli* bacteria exceed their respective standards, this stream is judged to be impaired by both fecal coliform and *E. coli* bacteria. Because this segment of the Chariton River is 110 miles in length and data from only one location, 20 miles from the mouth, is available, only the lower 40 miles of this water is judged to be **impaired** by bacteria.

Missouri Department of Natural Resources, Water Protection Program, [www.dnr.mo.gov](http://www.dnr.mo.gov), (573) 751-1300

2/8/2008 jf